

Claims

1. A disposable needleless injection device (1) comprising a body (2) supporting and/or delimiting a plurality of elements forming a circuit of elements, this circuit comprising, from upstream to downstream, an initiation device associated with a pyrotechnic gas generator, a reservoir (5) containing a liquid active principle that is to be injected and a system for injecting the active principle, the pyrotechnic gas generator comprising a pyrotechnic charge (62) placed in a combustion chamber (4), said combustion chamber (4) being divided into two volumes (V1, V2) by a wall (40), these two volumes (V1, V2) being defined, from upstream to downstream, as a first volume (V1) in which the pyrotechnic charge (62) is placed and a second volume (V2), the two volumes (V1, V2) communicating via a first device for regulating the pressure level in the combustion chamber (4), said device being characterized in that said chamber comprises a third volume (V3) situated downstream of the second volume (V2) and created during operation, said third volume (V3) being delimited by an expanding membrane (8) deployed under the action of the gases originating from the combustion of the pyrotechnic charge (62).

2. The device (1) as claimed in claim 1, characterized in that the first device for regulating the pressure level consists of a passage (41) formed through the wall (40).

3. The device (1) as claimed in claim 1 or 2, characterized in that the pyrotechnic charge (62) is arranged in a first sub-volume (V10) of the first volume (V1) of the combustion chamber (4), this first sub-volume (V10) being initially closed.

4. The device (1) as claimed in claim 3,

characterized in that the first sub-volume (V10) of the first volume (V1) of the combustion chamber (4) is separated, by a second device for regulating the pressure level, from a second sub-volume (V11) of the first volume (V1) of the combustion chamber (4) which
5 is situated downstream of the first sub-volume (V10).

5. The device (1) as claimed in claim 4, characterized in that the second regulating device
10 consists of a calibrated rupture disk (61).

6. The device (1) as claimed in claim 5, characterized in that the first sub-volume (V10) of the first volume (V1), in which the pyrotechnic charge (62)
15 is placed, is delimited in part by the walls of a cartridge (6) inserted in the body (2) of the device (1).

7. The device (1) as claimed in claim 6,
20 characterized in that the pyrotechnic charge (62) is placed in the cartridge (6) between the calibrated rupture disk (61) and a detonator (60) able to initiate the pyrotechnic charge (62).

8. The device (1) as claimed in claim 7,
25 characterized in that the cartridge (6) has the shape of an L-shaped duct in which the pyrotechnic charge (62) is placed, this duct being blocked off at one of its ends by the detonator (60) and at its other end by
30 the calibrated rupture disk (61).

9. The device (1) as claimed in claim 1, characterized in that the membrane (8) deploys into the reservoir (5) of active principle.

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10. The device (1) as claimed in claim 9, characterized in that the membrane (8) constitutes a sealed wall between the combustion chamber (4) and the reservoir (5) of active principle.

11. The device (1) as claimed in claim 9 or 10,
characterized in that the passage (41) is offset from a
longitudinal central axis of the combustion chamber (4)
5 and is formed in such a way as to be as far as possible
away from the membrane (8).